Fig 1

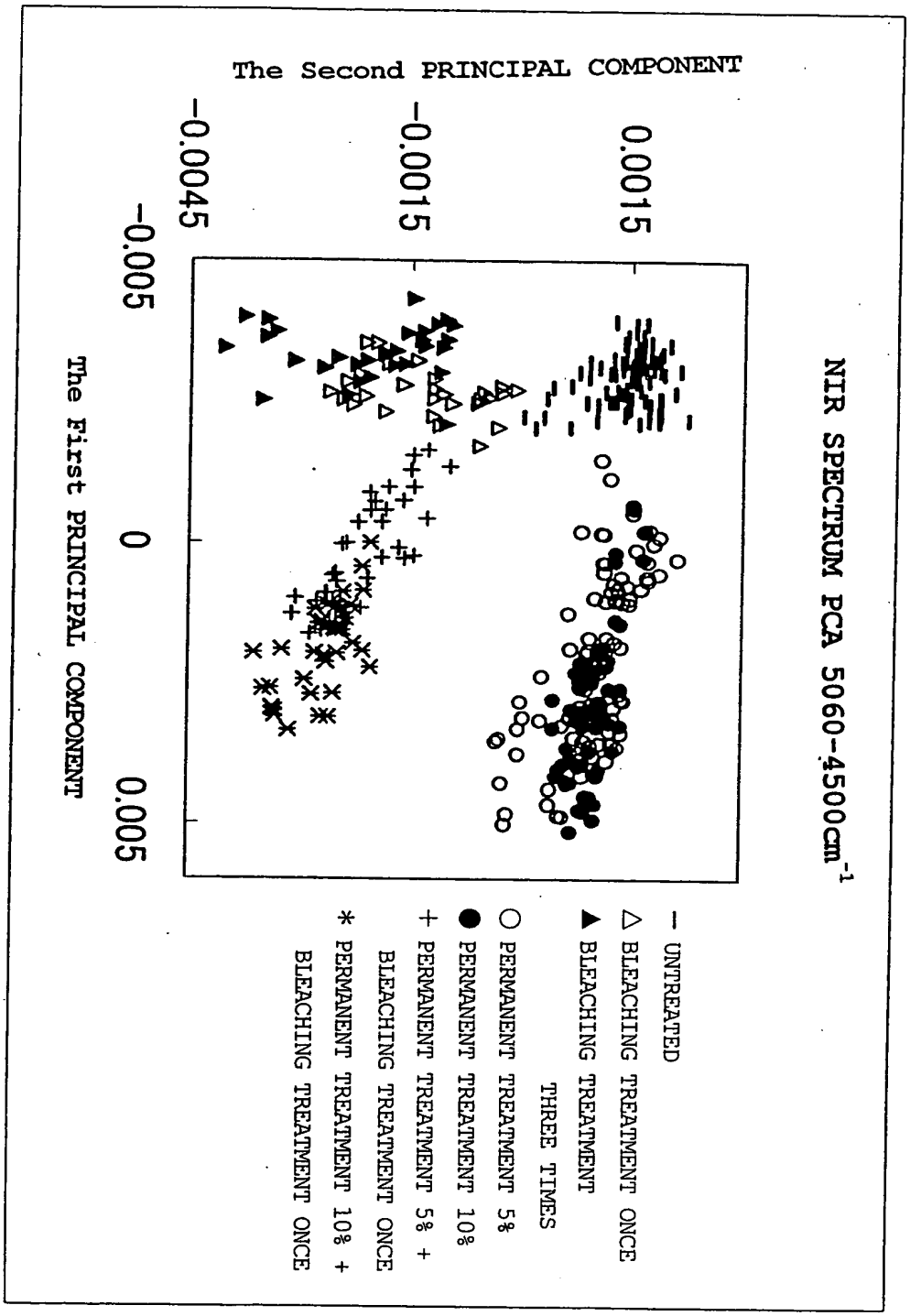
NIR SPECTRUM PCA 5060-4500cm-1
The Second PRINCIPAL COMPONENT
0.0015
-0.0015
-0.0045
-0.005
0
0.005
The First PRINCIPAL COMPONENT
– UNTREATED
△ BLEACHING TREATMENT ONCE
▲ BLEACHING TREATMENT THREE TIMES
○ PERMANENT TREATMENT 5%
● PERMANENT TREATMENT 10%
+ PERMANENT TREATMENT 5% + BLEACHING TREATMENT ONCE
* PERMANENT TREATMENT 10% + BLEACHING TREATMENT ONCE

Fig 2

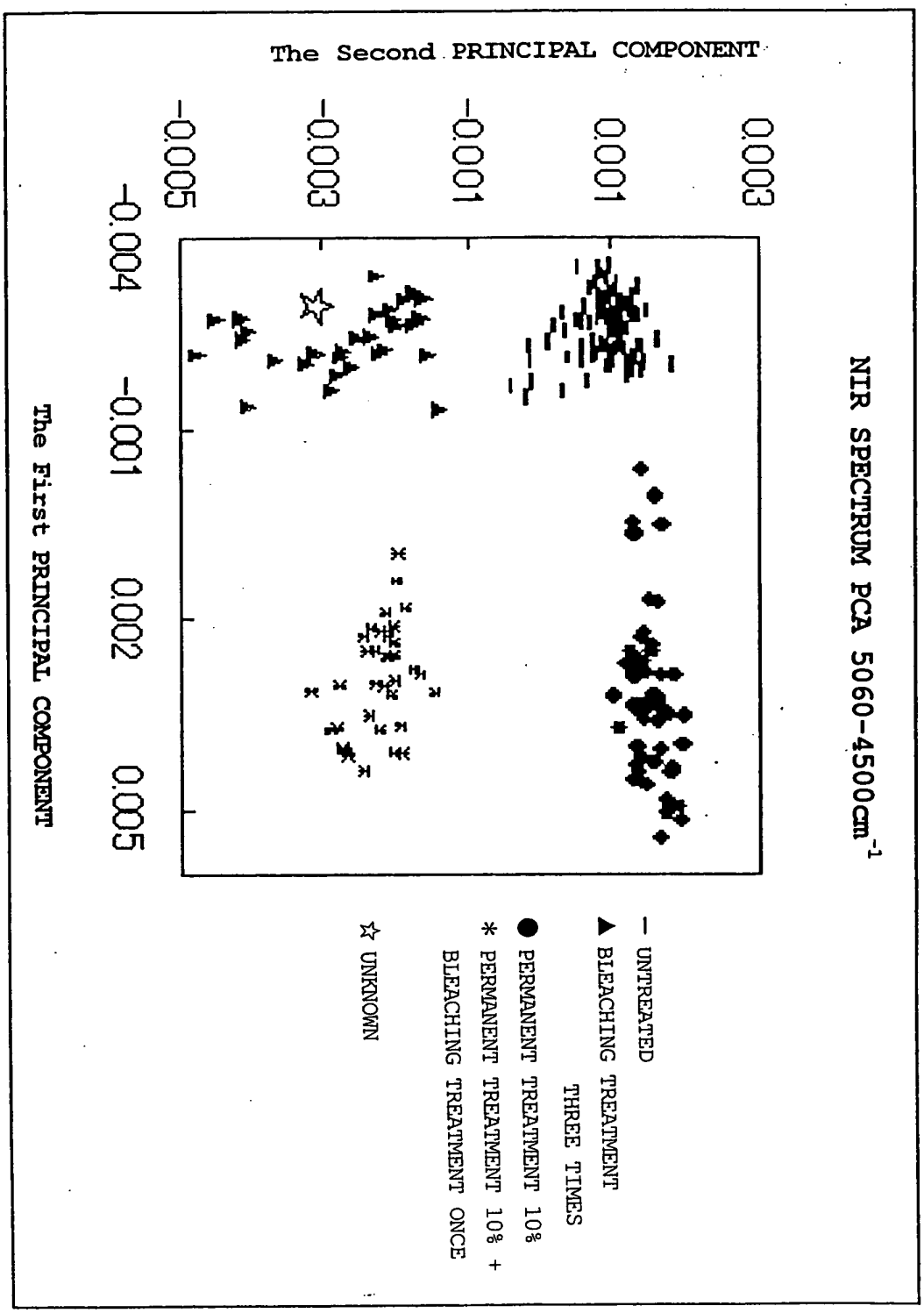
NIR SPECTRUM PCA 5060-4500cm-1
The Second PRINCIPAL COMPONENT
0.003
0.001
-0.001
-0.003
-0.005
-0.004
-0.001
0.002
0.005
The First PRINCIPAL COMPONENT
– UNTREATED
▲ BLEACHING TREATMENT THREE TIMES
● PERMANENT TREATMENT 10%
* PERMANENT TREATMENT 10% + BLEACHING TREATMENT ONCE
☆ UNKNOWN

Fig 3

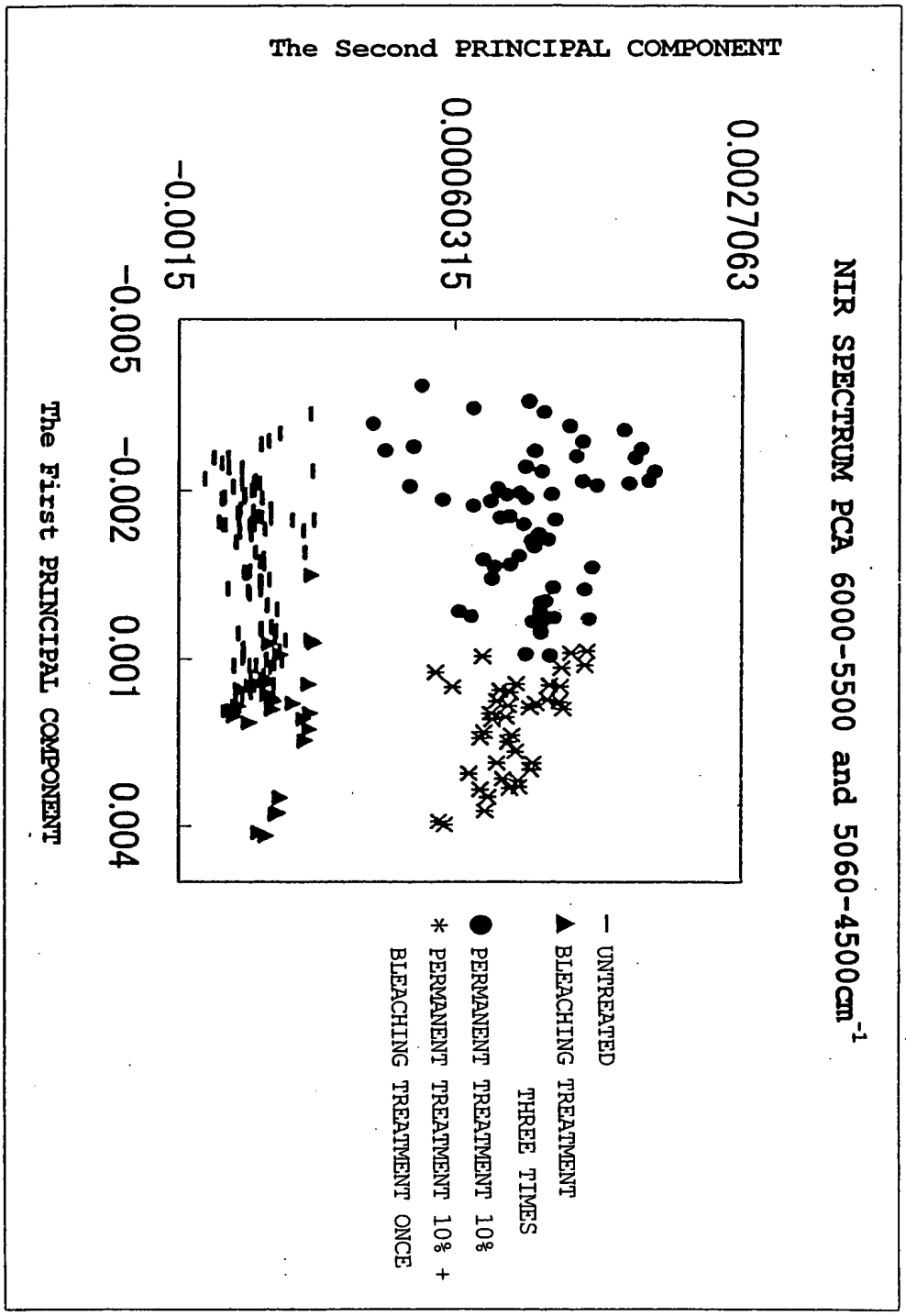
NIR SPECTRUM PCA 6000-5500 and 5060-4500cm-1
The Second PRINCIPAL COMPONENT
0.0027063
0.00060315
-0.0015
-0.005
-0.002
0.001
0.004
The First PRINCIPAL COMPONENT
– UNTREATED
▲ BLEACHING TREATMENT THREE TIMES
● PERMANENT TREATMENT 10%
* PERMANENT TREATMENT 10% + BLEACHING TREATMENT ONCE

Fig 4

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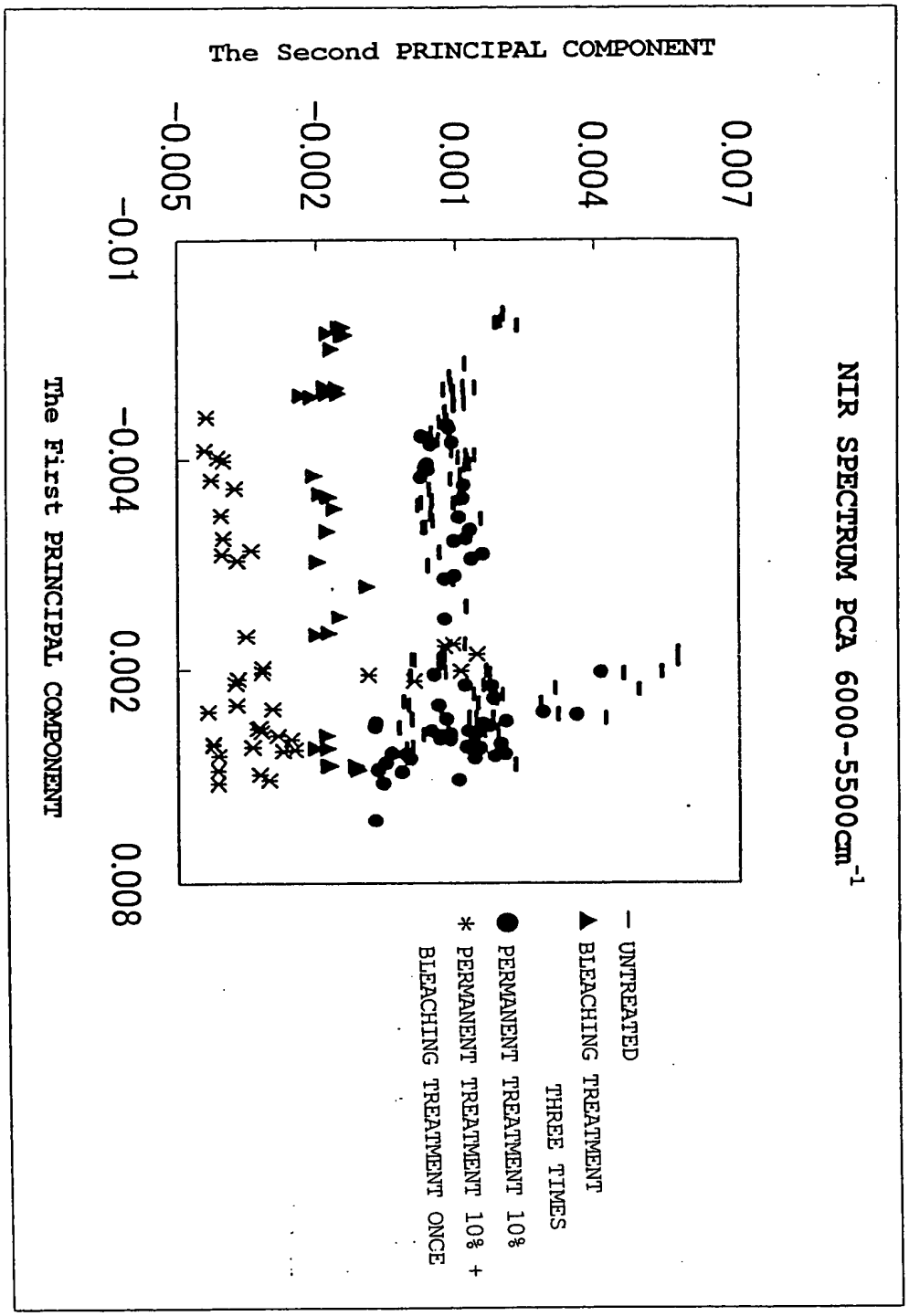

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Fig 5

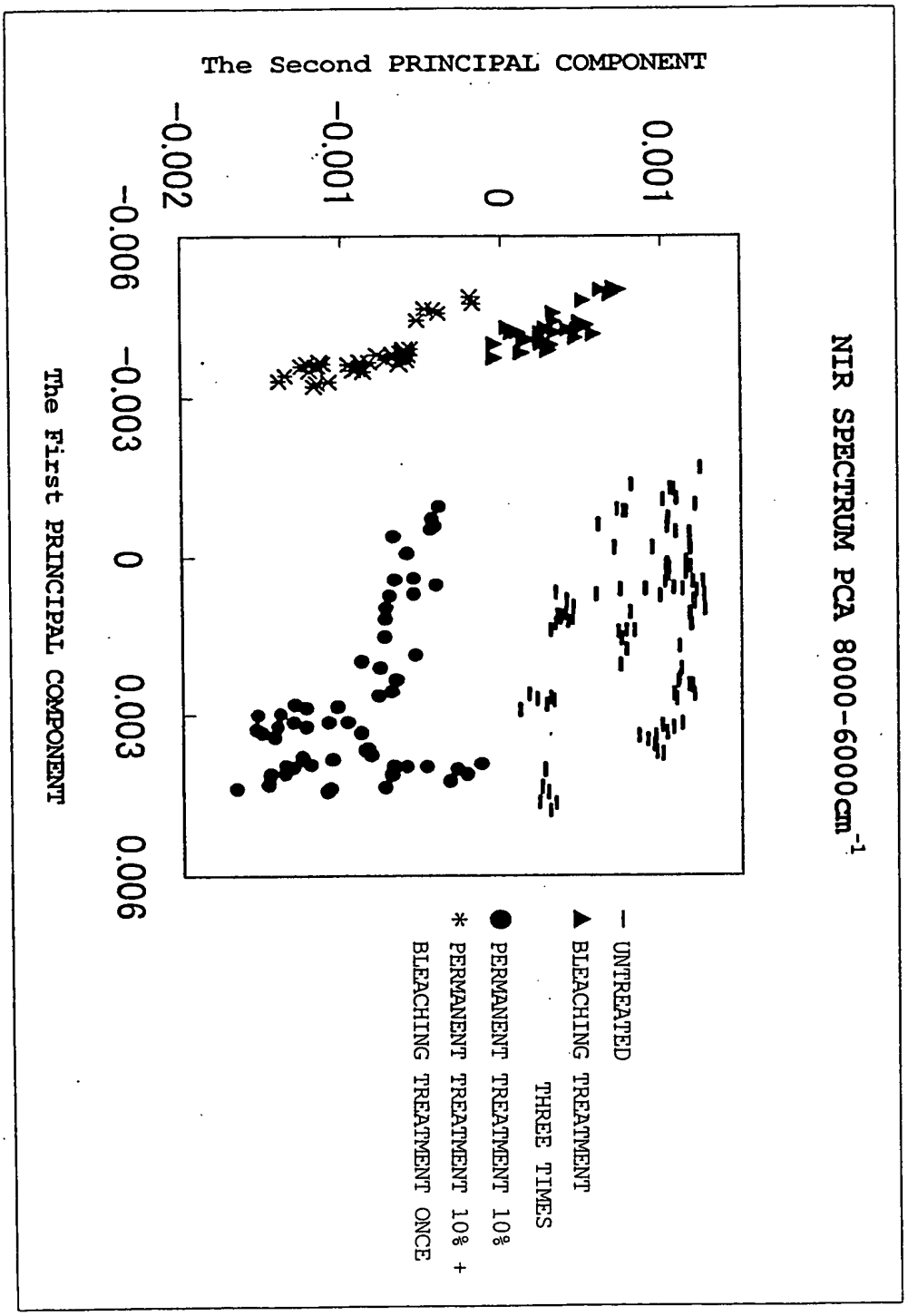

Fig 6

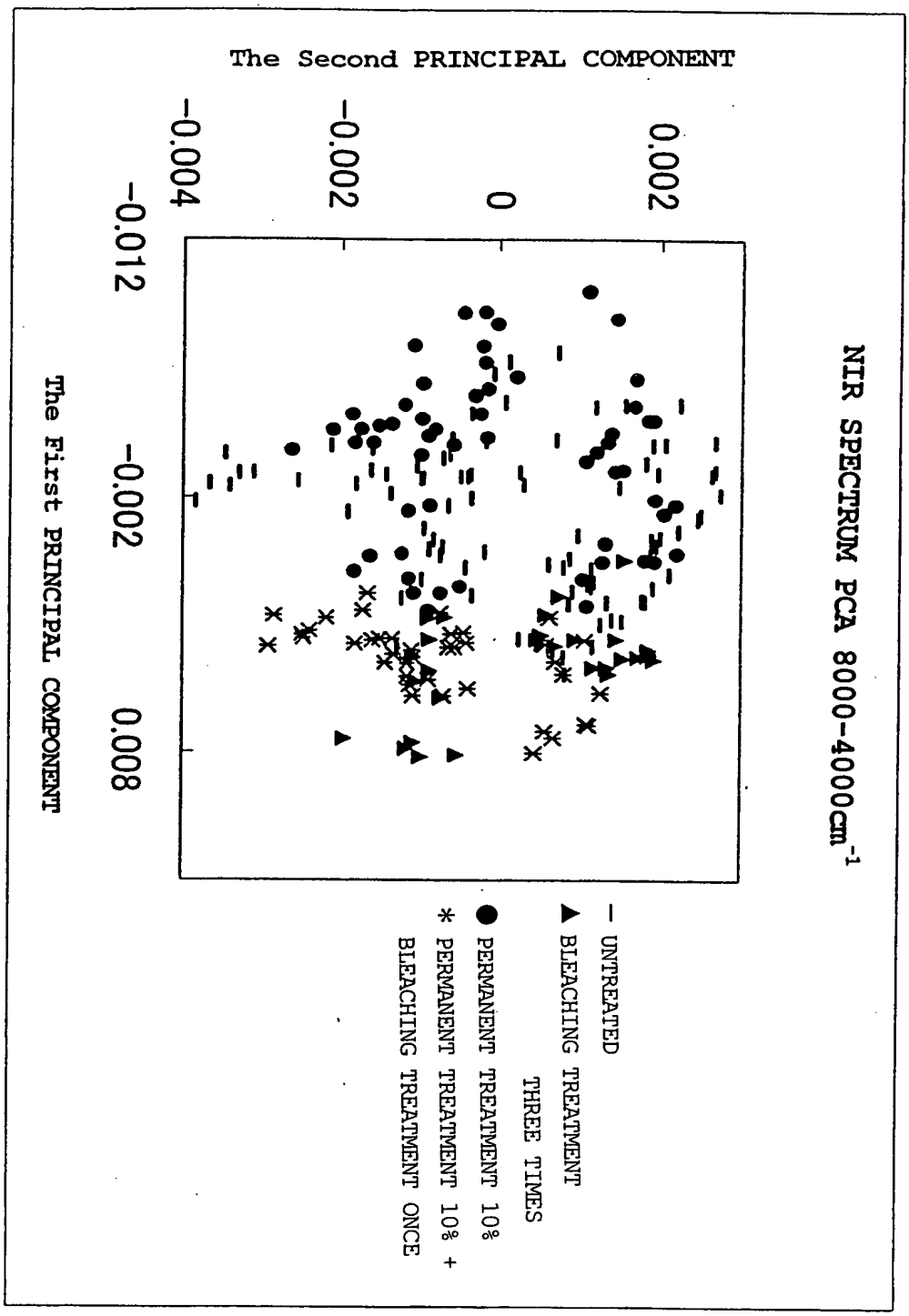
NIR SPECTRUM PCA 8000-4000cm-1
The Second PRINCIPAL COMPONENT
0.002
0
-0.002
-0.004
-0.012
-0.002
0.008
The First PRINCIPAL COMPONENT
— UNTREATED
▲ BLEACHING TREATMENT THREE TIMES
● PERMANENT TREATMENT 10%
* PERMANENT TREATMENT 10% + BLEACHING TREATMENT ONCE

Fig 7

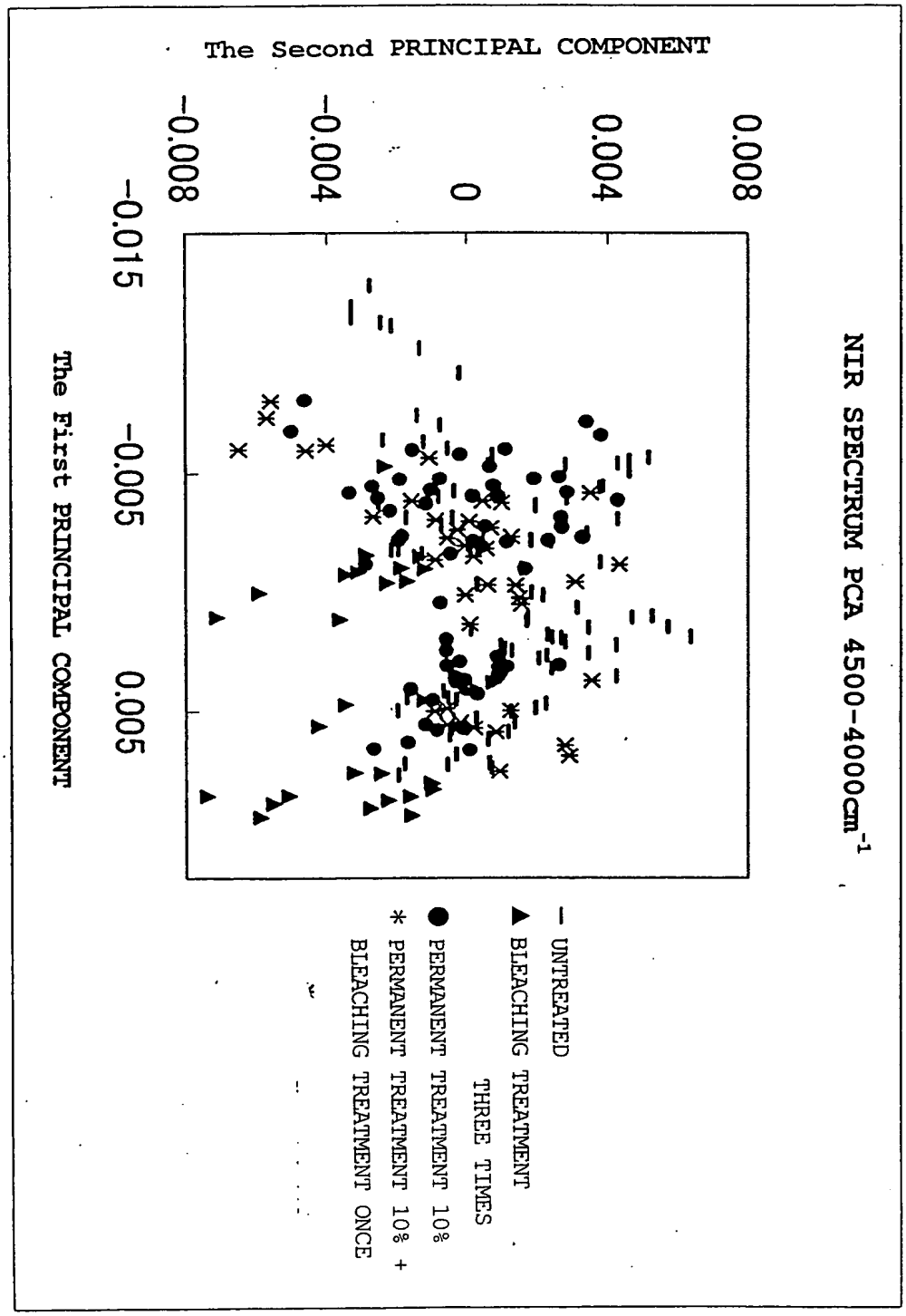
NIR SPECTRUM PCA 4500-4000cm-1
The Second PRINCIPAL COMPONENT
0.008
0.004
0
-0.004
-0.008
-0.015
-0.005
0.005
The First PRINCIPAL COMPONENT
– UNTREATED
▲ BLEACHING TREATMENT THREE TIMES
● PERMANENT TREATMENT 10%
* PERMANENT TREATMENT 10% + BLEACHING TREATMENT ONCE

Fig 8

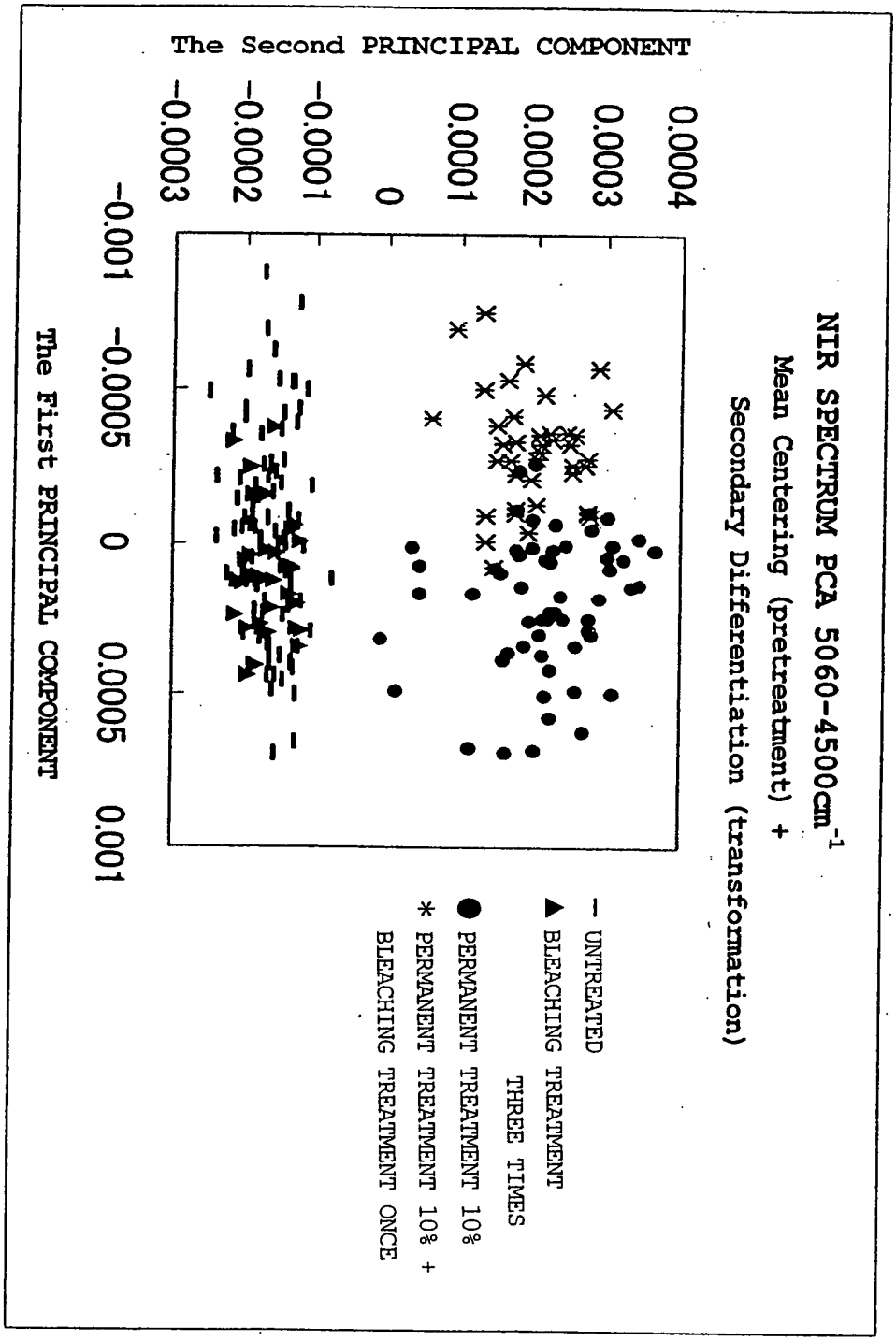
NIR SPECTRUM PCA 5060-4500cm-1
Mean Centering (pretreatment) +
Secondary Differentiation (transformation)
The Second PRINCIPAL COMPONENT
0.0004
0.0003
0.0002
0.0001
0
-0.0001
-0.0002
-0.0003
-0.001
-0.0005
0
0.0005
0.001
The First PRINCIPAL COMPONENT
– UNTREATED
▲ BLEACHING TREATMENT THREE TIMES
● PERMANENT TREATMENT 10%
* PERMANENT TREATMENT 10% + BLEACHING TREATMENT ONCE

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Fig. 9

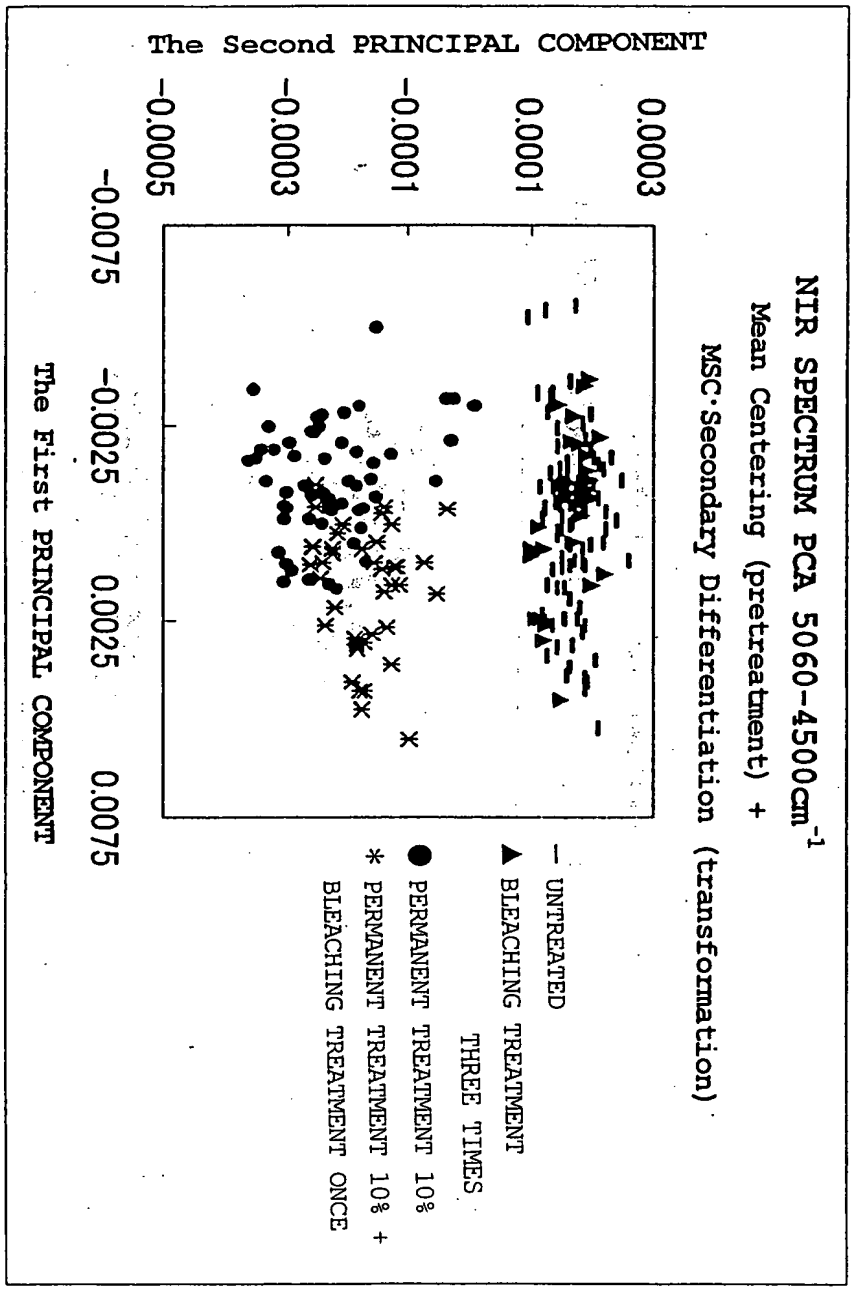

Fig 10

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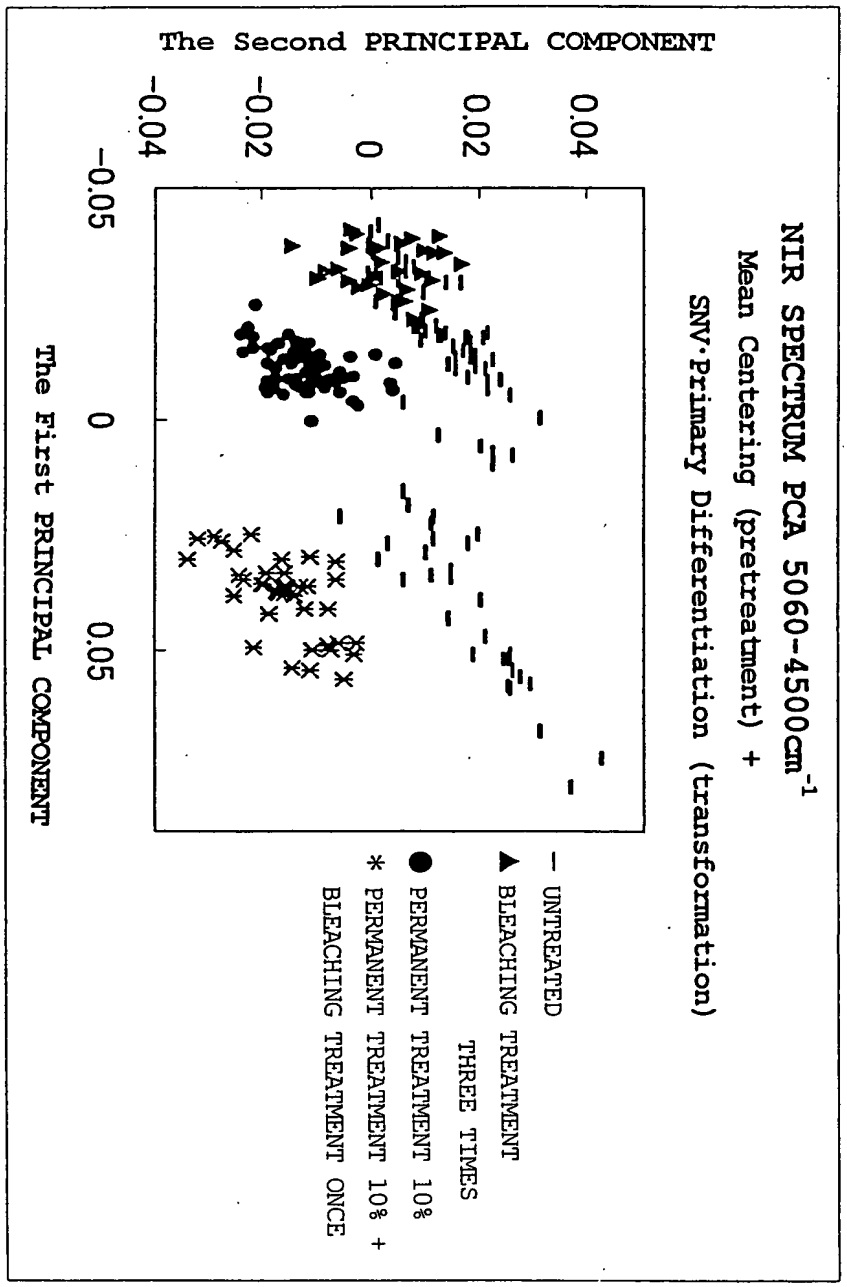
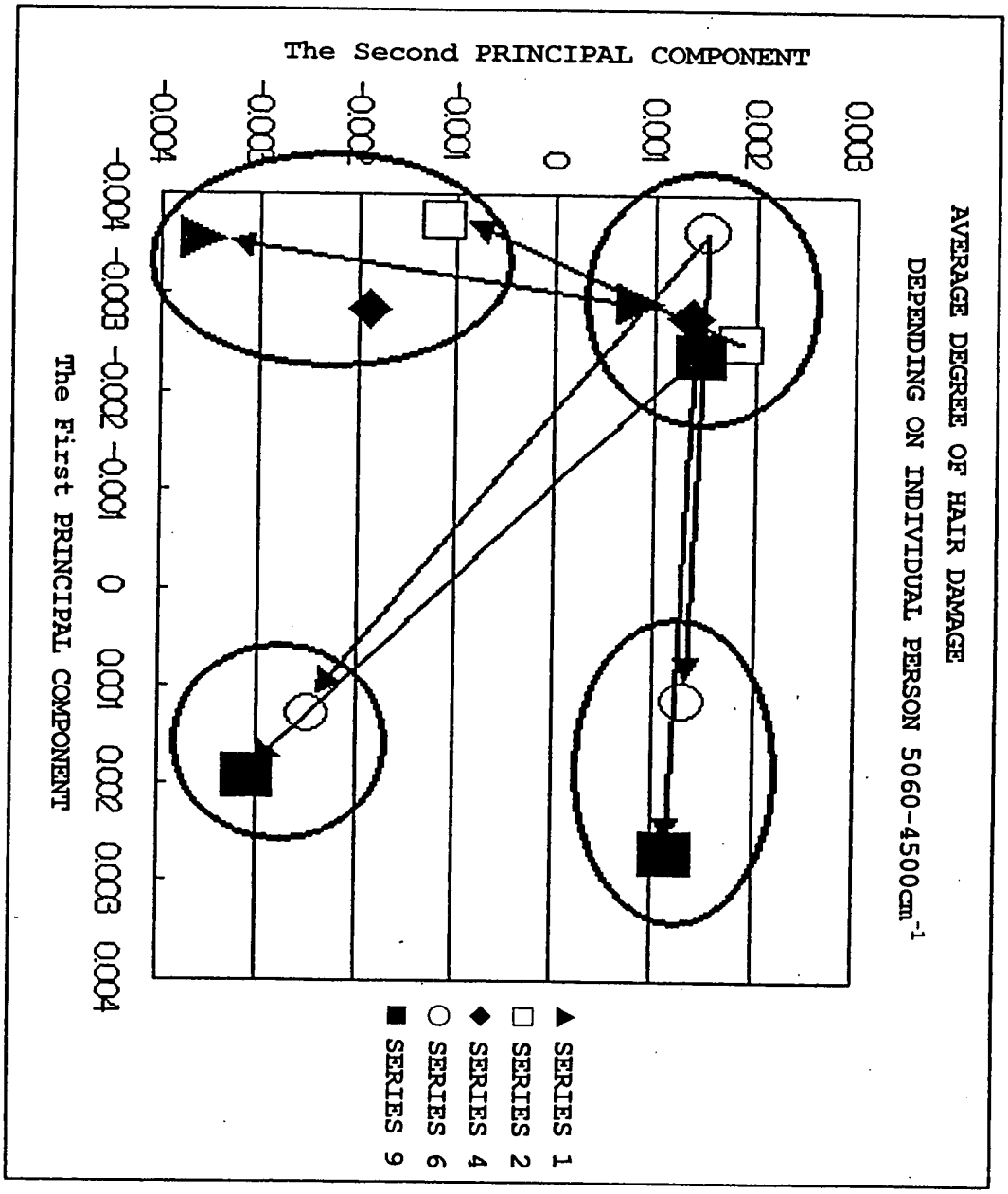


Fig 11

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